ABSTRACT

Nucleic acid (e.g., DNA) hybridization probes are described which comprise a labeled, single copy nucleic acid which hybridizes to a deduced single copy sequence interval in target nucleic acid of known sequence. The probes, which are essentially free of repetitive sequences, can be used in hybridization analyses without adding repetitive sequence-blocking nucleic acids. This allows rapid and accurate detection of chromosomal abnormalities. The probes are preferably designed by first determining the sequence of at least one single copy interval in a target nucleic acid sequence, and developing corresponding hybridization probes which hybridize to at least a part of the deduced single copy sequence. In practice, the sequences of the target and of known genomic repetitive sequence representatives are compared in order to deduce locations of the single copy sequence intervals. The single copy probes can be developed by any variety of methods, such as PCR amplification, restriction or exonuclease digestion of purified genomic fragments, or direct synthesis of DNA sequences. This is followed by labeling of the probes and hybridization to a target sequence.